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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/BAK/CSR-11/1841/CEMENT/2016-17

Date: 05.11.2016

TEST REPORT ON CEMENT

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** # 316, 25th Cross, Banashankari 2nd stage, Bangalore – 560 070.
* Name of Work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 03.11.2016
* Sample ID	:	Cement (Zuari – 43 Grade)
Sample Received on	:	03.11.2016
Period of Testing	:	03.11.2016 to 05.11.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988 (RA-2014)	28.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988 (RA-2014)	160 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988 (RA-2014)	480 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988 (RA-2014)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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VIDYARANI P.K.
Technical Manager

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Job No.: CTCE/BBMP/BAK/CSR-11/1841/SAND-Gradation/2016-17 05.11.2016

TEST REPORT ON SIEVE ANALYSIS OF FINE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** # 316, 25th Cross, Banashankari 2nd stage, Bangalore – 560 070.
* Name of Work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 03.11.2016
* Sample ID	:	Manufactured Sand
Technical Reference	:	IS : 2386 (Part 1) - 1963 (RA-2011)
Sample Received On	:	03.11.2016
Date of Testing	:	05.11.2016

Total Wt. of Aggregates in gms = **1000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2011)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	97.00	90-100	90-100	90-100	95-100
2.36	76.00	60-95	75-100	85-100	95-100
1.18	47.00	30-70	55-90	75-100	90-100
600 Micron	22.00	15-34	35-59	60-79	80-100
300 Micron	13.50	5-20	8-30	12-40	15-50
150 Micron	7.50	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

Note 1 :
For crushed stone sands, the permissible limit on 150-micron IS Sieve is increased to 20 percent. This does not affect the 5 percent allowance permitted in 4.3 of IS 383 applying to other sieve sizes.

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Job No.: CTCE/BBMP/BAK/CSR-11/1841/AGG/GR/2016-17

05.11.2016

TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** # 316, 25th Cross, Banashankari 2nd stage, Bangalore – 560 070.
* Name of Work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 03.11.2016
* Sample ID	:	Coarse Aggregates (40mm) & Down Size
Technical Reference	:	IS : 2386 (Part 1) -1963 (RA-2011)
Sample Received on	:	03.11.2016
Date of Testing	:	05.11.2016

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2011)
		Graded
80	100	100
63	100	-
40	97.90	95-100
20	41.90	30-70
10	16.90	10-35
4.75	1.90	0-5

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** # 316, 25th Cross, Banashankari 2nd stage, Bangalore – 560 070.
* Name of Work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 03.11.2016
* Sample ID	:	Coarse Aggregates (20mm) & Down Size
Technical Reference	:	IS : 2386 (Part 1) -1963(RA-2011)
Sample Received on	:	03.11.2016
Date of Testing	:	05.11.2016

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS :383-1970 (RA- 2011)
		Graded
40	100	100
20	96.40	95-100
10	32.40	25-55
4.75	7.28	0-10

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits

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Job No.: CTCE/BBMP/BAK/CSR-11/184l/Kerb Stone/2017-18

24.04.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CORE

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** # 316, 25th Cross, Banashankari 2nd stage, Bangalore – 560 070.
* Name of work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2017-18 Dated: 20.04.2017
* Sample ID	:	Kerb Stone
Grade of Concrete	:	M_{15}
Technical Reference	:	IS:516-1959 (RA- 2013), SP-24:1983.
Sample Received on	:	20.04.2017
Date of Testing	:	24.04.2017

Sl. No	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	82.00	0.406	2521.64	1.64	0.961	22.55	11.48	12.40	12.91	16.13
2	50.00	83.00	0.415	2546.48	1.66	0.963	24.60	12.53	13.53	13.03	16.29
3	50.00	84.00	0.418	2534.35	1.68	0.965	26.90	13.70	14.80	14.28	17.86

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/BAK/INW.No-1976/GSA/2017-18 01.05.2017

TEST REPORT ON GRAIN SIZE ANALYSIS FOR GRAVEL

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** #316,25th cross, Banashankari 2nd Stage, Bangalore-560070.
* Name of Work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2017-18 Dated: 20.04.2017
* Sample ID	:	Embankment Soil
Technical Reference	:	IS : 2720 (Part-4) : 1985 (RA-2010)
Date of Testing	:	01.05.2017

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Mass of Partial Sample taken for Analysis (in gms)= **500**

Is Sieve Size (mm)	Mass of Gravel retained (in gms)	Percentage of Mass retained	Percentage of Cummulative Mass retained	Percentage Passing
4.750	63.50	12.70	12.70	87.30
2.36	52.00	10.40	23.10	76.90
2.000	15.00	3.00	26.10	73.90
1.180	51.50	10.30	36.40	63.60
0.600	34.50	6.90	43.30	56.70
0.425	23.00	4.60	47.90	52.10
0.300	13.50	2.70	50.60	49.40
0.150	33.50	6.70	57.30	42.70
0.075	20.00	4.00	61.30	38.70

Gravel = 12.70
Sand = 48.60
Silt & Clay = 38.70

*Information is furnished by the Customer/Representative.

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Job No: CTCE/BBMP/BAK/INW.No-1976/SOIL/2017-18 Date: 31.08.2016

TEST REPORT ON HEAVY COMPACTION FOR SOIL

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** #316,25th cross, Banashankari 2nd Stage, Bangalore-560070.
* Name of Work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 22.08.2016
* Sample ID	:	Soil-Main Bund
Sample Received on	:	29.08.2016
Date of Testing	:	31.08.2016

The results of the test Conducted on the Soil sample is as follows

Sl. No.	Name of Test	Test as per IS Code	Test Results
1	Determination of water Content-Dry Density Relation using heavy Compaction	IS 2720 (Part 8)-1983 (RA-2010)	MDD = 1.96 g/cc OMC = 11.90 %

*Information is furnished by the Customer/Representative.

MDD = Maximum Dry Density in g/cc
OMC = Optimum Moisture Content in percentage

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Job No.: CTCE/BBMP/BAK/INW No.1976/Soil/2017-18 03.09.2016

TEST REPORT ON DRY DENSITY OF SOIL IN PLACE BY THE CORE - CUTTER METHOD

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** #316,25th cross, Banashankari 2nd Stage, Bangalore-560070.
* Name of work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 22.08.2016
* Sample ID	:	SOIL
Technical Reference	:	IS : 2720 - (Part 29) 1974 (RA-2010)
Date of Test	:	02.09.2016

Max.Dry Density g/cc	:	1.96
Optium Moisture Content (%)	:	11.90

DETERMINATION OF WET DENSITY	
Location	Main bund 2m depth
Chainage	50m
Wt of empty Cylinder in grams	883
Cylinder + Wet Soil in grams	2871.5
Volume of the Cylinder in Cm^3	1020.50
Insitu Bulk density Wet excavated soil Y=w/v	1.95
Moisture Content (%)	3.76
DETERMINATION OF DRY DENSITY	
Field dry Density (g/cc)	1.88
Field compaction achieved (%)	95.82
Required Compaction (%)	95.0

*Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/BAK/INW No.1976/Soil/2017-18 03.09.2016

TEST REPORT ON DRY DENSITY OF SOIL IN PLACE BY THE CORE - CUTTER METHOD

* Customer	:	**Asst. Executive Engineer,** Lakes, BBMP, Bangalore.
* Agency	:	**Mr. Balakrishna Arun Kumar,** #316,25th cross, Banashankari 2nd Stage, Bangalore-560070.
* Name of work	:	Development of Doddabommasandra Lake Phase-2, BBMP, Bangalore.
* Reference	:	AEE/Lakes/PR/97/2016-17 Dated: 22.08.2016
* Sample ID	:	SOIL
Technical Reference	:	IS : 2720 - (Part 29) 1974 (RA-2010)
Date of Test	:	02.09.2016

Max.Dry Density g/cc	:	1.96
Optium Moisture Content (%)	:	11.90

DETERMINATION OF WET DENSITY	
Location	Main bund 2m depth
Chainage	100m
Wt of empty Cylinder in grams	951
Cylinder + Wet Soil in grams	2930
Volume of the Cylinder in Cm^3	1020.50
Insitu Bulk density Wet excavated soil Y=w/v	1.94
Moisture Content (%)	3.82
DETERMINATION OF DRY DENSITY	
Field dry Density (g/cc)	1.87
Field compaction achieved (%)	95.30
Required Compaction (%)	95.0

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